TASK 1

ARAC ESHWG REPORT 25.1353(d)

1 - What is underlying safety issue addressed by the FAR/JAR?

The rule gives design requirements relating to the installation of aircraft electrical wiring. All wire and equipment installations must provide for continuous fault protection against fire and smoke hazards, there must be permanent cable, connector and terminal identification and the risk of mechanical, fluid, heat or vapor damage must be minimized.

2 - What are the current FAR and JAR standards?

Current FAR text:

There is no current FAR rules text.

Current JAR text:

JAR 25.1353(d)

(d) Electrical cables and cable installations must be designed and installed as follows:

(1) The electrical cables used must be compatible with the circuit protection devices required by JAR 25.1357, such that a fire or smoke hazard cannot be created under temporary or continuous fault conditions.
(2) Means of permanent identification must be provided for electrical cables, connectors and terminals.
(3) Electrical cables must be installed such that the risk of mechanical damage and/or damage caused by fluids, vapors or sources of heat, is minimized.

3 - What are the differences in the standards and what do these differences result in?

JAR 25.1353(d) provides very explicit aircraft installation design requirements for electrical cables. FAR 25.1353(a), (b) and (c) does not address these design features.

4 - What, if any, are the differences in the means of compliance?

The JAR states specific requirements for cable installations that must be met. Installation designs approved by the FAR's typically meet the JAR requirement. Installation designers through experience have adopted the practice of permanent identification, protection and installation routing to minimize the risk of damage to electrical cables.

5 – What is the proposed action?

Adoption of JAR 25.1353(d) in its entirety is recommended. This requires an appropriate design action to be taken, removes the possibility that a designer may not consider a critical installation design condition and is in line with current best design practices.